

AMENDMENT OF CLAIMS

19. (Previously Presented) A method for making a vertically integratable circuit comprising the steps of:

providing first and second substrates, and a first insulation layer interposed between the first and second substrates, the first substrate located on a first side of the first insulation layer and the second substrate located on a second side of the first insulation layer opposed to the first side;

providing the first substrate with active circuit components along and within at least one portion thereof to define a first circuit layer;

applying a second insulation layer over the first circuit layer;

forming at least one first gap through the second insulation layer that extends at least a portion into the first circuit layer and is in communication with the active circuit components thereof;

filling the at least one first gap with a first metalization that defines at least one first side vertical contact;

thinning the second substrate to expose the second side of the first insulation layer;

forming at least one second gap through the first insulation layer that extends at least into a portion of the first circuit layer, the at least one second gap generally coinciding with the at least one first side vertical contact; and

applying a second metalization along the second side of the first insulation layer, at least a portion of the second metalization extending through the at least one second gap to contact the first side vertical contact and defining a second side vertical contact.

20. (Previously Presented) The method according to claim 19, wherein portions of the second metalization are interrupted at locations corresponding to the at least one first side vertical contact.

21. (Previously Presented) The method according to claim 19, wherein some of the active circuit components of the first circuit layer extend to the first insulation layer and surround the connection between the first and second side vertical contacts.

22. (Previously Presented) The method according to claim 21, further comprising the steps of:

forming an annular gap in the second insulation layer, the annular gap extending into at least a portion of the first circuit layer and surrounding the first side vertical contact such that some of the active circuit components intermediate the annular gap and the first side vertical contact; and

filling the annular gap with a third metalization.

23. (Previously Presented) A vertically integratable circuit, comprising:

a first insulation layer having a generally planar form, and opposed first and second sides, the first insulation layer defining at least one opening extending therethrough;

a first circuit layer bearing a plurality of active circuit components, a first side of the first circuit layer located on the first side of the first insulation layer;

a second insulation layer positioned on a second side of the first circuit layer opposed to the first side thereof, said second insulation layer having at least one first side vertical contact extending therethrough and into at least a portion of the first circuit layer; and

a second circuit layer located along the second side of the first circuit insulation layer and defined as a metallized layer, the second circuit layer having a second side portion extending through the at least one opening of the first insulation layer and into at least a portion of the first circuit layer so as to connect to the first side vertical contact.

24. (Currently Amended) The circuit according to claim 23, further comprising:

an annular metalization extending through the second insulation layer and into at least a portion of the first circuit layer, ~~[[the]]~~ a third metalization annularly surrounding the first side vertical contact with at least a portion of the active circuit components interposed therebetween.

25. (Previously Presented) A method for making a vertically integratable circuit consisting essentially the steps of:

providing first and second substrates, and a first insulation layer interposed between the first and second substrates, the first substrate located on a first side of the first insulation layer and the second substrate located on the second side of the first insulation layer;

providing the first substrate with active circuit components along and within at least one portion thereof to define a first circuit layer;

applying a second insulation layer over the first circuit layer;

forming at least one first gap through the second insulation layer and extending at least a portion into the first circuit layer in communication with the or active circuit components thereof ;

filling the at least one first gap with a first metalization, that devines at least one first side vertical contact;

thinning the second substrate to expose the second side of the first insulation layer;

forming at least one second gap through the first insulation layer that extends at least into a portion of the first circuit layer adjacent the first insulation layer, the at least one second gap generally coinciding with the at least one first side vertical contact;

applying a second metalization along the second side of the first insulation layer, at least a portion of the second metalization extending through the at least one second gap to contact the first side vertical contact and defining at least one second side vertical contact;

forming an annular gap in the second insulation layer, the annular gap extending into at least a portion of the first circuit layer and surrounding the at least one first side vertical contact such that a portion of the active circuit components is intermediate the annular gap and the at least one first side vertical contact; and
filling the annular gap with a third metalization.

26. (Currently Amended) A vertically integratable circuit, consisting essentially of:
a first insulation layer having a generally planar form, and opposed first and second sides, the first insulation layer defining at least one opening extending therethrough;

a first circuit layer bearing a plurality of active circuit components, a first side of the first circuit layer located on the first side of the first insulation layer;

a second insulation layer positioned on a second side of the first circuit layer, said second insulation layer having at least one first side vertical contact extending therethrough and into at least a portion of the first circuit layer;

a second circuit layer located along the second side of the first insulation layer and defined as a metallized layer, the second circuit layer having a second side portion extending through the at least one opening of the first insulation layer and into at least a portion of the first circuit layer so as to connect to the first side vertical contact;

an annular metalization extending through the second insulation layer and into at least a portion of the first circuit layer, ~~[[the]]~~ a third metalization annularly surrounding the first side vertical contact with at least a portion of the active circuit components interposed therebetween.